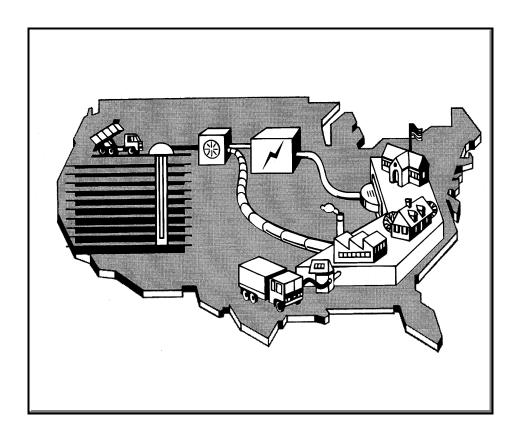


Landfill Gas-to-Energy Project Opportunities

Landfill Profiles for the State of Washington





EPA Landfill Methane Outreach Program



The EPA Landfill Methane Outreach Program, a key component of the United State's *Climate Change Action Plan*, encourages the use of landfill gas (LFG) as an energy resource. EPA assists utilities,

municipal and private landfill owners and operators, tribes, and state agencies in reducing methane emissions from landfills through the development of profitable landfill energy recovery projects. Methane captured from landfills can be transformed into a cost-effective fuel source for electricity, heat, boiler and vehicular fuel, or sale to a pipeline. EPA estimates there are approximately 200 landfill methane recovery projects in the U.S. and that up to 750 landfills could install economically viable landfill energy projects.

The Landfill Methane Outreach Program includes five important components: the State Ally, Energy Ally, Industry Ally, Community Partner, and Endorser programs. EPA establishes separate alliances with state agencies, energy providers (including investor-owned, municipal and other public power utilities and cooperatives), key trade and public sector associations, members of the landfill gas development industry (including developers, engineers, equipment vendors, and others) and local communities, municipalities and landfill owner/operators through a Memorandum of Understanding (MOU). By signing the MOU, each Ally/Partner acknowledges a shared commitment to the promotion of landfill gas-to-energy recovery at solid waste landfills, recognizes that the widespread use of landfill gas will reduce emissions of methane and other gases, and commits to undertake activities to enhance development of this resource. In return, EPA agrees to provide landfill gas-to-energy project assistance and public recognition of the Allies' and Partners' participation in the program.

Introduction

Since 1994 the U.S. EPA's Landfill Methane Outreach Program (LMOP) has participated in an ongoing effort to gather information on Municipal Solid Waste landfills (MSW). A key component of the LMOP is to provide MSW landfill owners and operators, project developers, utilities, and other potential project participants with information on MSW landfills that may offer attractive energy development opportunities. This document presents state specific landfill information, hereinafter referred to as the landfill profiles. These profiles are useful to evaluate the potential for developing landfill gas-toenergy projects (LFGTE). EPA assembled this information from state and local sources as well as various national solid waste publications, landfill owners and operators, and project developers.

The EPA has prepared a separate document to describe the methodology used to develop the state-specific landfill profiles and estimate the benefits of using LFGTE as an energy source. The document, Landfill Gas-to-Energy Project Opportunities, Background Information on Landfill Profiles, contains background information on gas collection and use, describes the data fields according to the five sections listed on the landfill profiles, and where applicable, illustrates calculations and default values used to derive estimates. EPA strongly recommends that users read the document prior to using the landfill profiles. Users can obtain the document by calling the LMOP hotline at 1-888-STAR-YES.

Data Sources

- EPA-ORD Landfill Gas Utilization-Survey (Thorneloe, 1997)
- Directory and Atlas of Solid Waste Disposal Facilities (SWA, 1994)
- Implementation Guide for Landfill Gas Recovery Projects in the Northeast (SCS, 1994)
- Landfill Gas-to-Energy 1994-1995 Activity Report (SWT, 1994)
- Methane Recovery from Landfill Yearbook (GAA, 1994)
- · Project developers, landfill owners, and operators
- · State and local records
- · Survey of Landfill Gas Generation Potential (EPRI, 1992)
- U.S. Landfill Directory (SWANA, 1992)

Landfill Classification

To facilitate the use of available landfill information, EPA has categorized the landfills into five categories: Current Project, ¹ Candidate Project, Shutdown, Other, and Unknown waste-in-place (WIP). These categories are based on the status of the landfill's LFGTE project(s) and WIP. The generation of methane is a function of many factors, the most critical being the amount of waste-in-place and the number of years the waste has been in the landfill. Peak methane generation occurs soon after closure; therefore, the longer the landfill has been closed, the less attractive it becomes for methane recovery. Based on the general timing of peak methane generation, EPA assumes that landfills that ceased accepting waste prior to 1993 have a low probability of generating enough methane to make a gas recovery project economical. Consequently, landfills need to be operating in 1993 to be considered as having a Candidate Project.

Landfill Categorizes

Current Project:

 Landfill with operational LFGTE project or landfill with LFGTE project under construction.

Candidate Project:

- Landfill with a potential or planned LFGTE utilization project; or
- Landfill is currently operating or closed after 1993; and has more than 1,000,000 tons of municipal solid waste-inplace.²

Shutdown:

· Landfill with shutdown LFGTE project.

Other

 Landfill has less than 1,000,000 tons of municipal solid waste-in-place with no current or planned LFGTE project.

Unknown WIP:

 Landfill with insufficient data to determine the waste-inplace

State Summary

State-specific landfill profile information is summarized in three exhibits. Exhibit 1 presents a summary of the state-specific potential for LFG utilization energy by landfill category. Exhibit 2 summarizes the emissions avoided by fossil fuel displacement for electricity generation and direct use projects. Exhibit 3 presents an index of the state-specific MSW landfills, referenced by category, landfill name and general characteristics.

² By modeling the relationship between WIP and methane generation, a cut-off of 1,000,000 tons of WIP was established; landfills having at least 1,000,000 tons of WIP are considered candidate landfills.



¹ Current projects illustrate the wide range of successful project development options.

Exhibit 1: Washington MSW Landfill Summary

Category	No. of			Est. CH4	Methane R		•	CO2 Equivalent of CH4		
	Landfills	Electricity (MW)	Gas Capacity (mmBtu/hr)	Generation (mmscf/d)	(tons/yr)		Reduction (tons/yr)			
					Potential	Current	Potential	Current		
Current	3	16	155	5	28,593	24,668	600,459	518,032		
Candidate	11	68	685	22	126,681	72,848	2,660,303	1,529,812		
Other	14	13	132	4	24,438	0	513,190	0		
Unknown WIP	26									
Total	54	97	971	31	179,712	97,516	3,773,952	2,047,844		

Exhibit 2: Potential Washington Emissions Avoided by Fossil Fuel Displacement

Category		Electricity Generation Project						Direct Use Project					
	CO2 (tons/yr)		SO2 (tons/yr)		CO2 (tons/yr)			SO2 (tons/yr)					
	Coal	Oil	Natural Gas	Coal	Oil	Natural Gas	Coal	Oil	Natural Gas	Coal	Oil	Natural Gas	
Current	122,338	100,409	67,517	773	646	0	86,105	70,671	47,520	784	412	0	
Candidate	539,865	443,097	297,944	3,412	2,852	0	381,483	313,104	210,536	3,471	1,825	2	
Other	104,184	85,510	57,498	659	550	0	73,591	60,400	40,614	670	352	0	
Unknown WIP													
Total	766,387	629,016	422,959	4,844	4,049	0	541,179	444,175	298,669	4,924	2,589	3	

Exhibit 3: Index of Landfills in Washington

Cotogony	Landfill Name		WIP	Landinis in	Landfill	LFG Collected	LFG	Status of LFGTE
Category	Landill Name				Operating in		Utilization	Project
		<2.5 million tons	2.5 to 4 million tons	>4 million tons	1998		Project	i roject
Current	Northside LF		✓			✓		Construction
Current	Olympic View LF			~	✓	✓	✓	Operational
Current	Tacoma LF			✓	✓	✓		Construction
Candidate	Cathcart LF		✓			✓		Planned
Candidate	Cedar Hills LF			✓	✓	✓		Planned
Candidate	Cheyne Road LF	✓			✓			Potential
Candidate	Cowlitz County LF-B	V			✓			Potential
Candidate	Greater Wenatchee LF	V			✓			Potential
Candidate	Hawks Prairie LF		✓		✓	✓		Potential
Candidate	Hidden Valley LF			V	✓	✓		Planned
Candidate	Kent Highlands LF			✓		✓		Potential
Candidate	Roosevelt Regional LF			V	✓	✓		Planned
Candidate	Terrace Heights LF			✓	✓			Potential
Candidate	West LF							Planned
Other	Aberdeen LF	✓				✓		Unknown
Other	Asotin County LF	✓			✓			Unknown
Other	Bruce LF	✓			✓			Unknown
Other	Cedarville LF	✓				✓		Unknown
Other	Centralia LF	V				✓		Unknown
Other	Cowlitz County LF(A)	✓				✓		Unknown
Other	Hansville LF	V				✓		Unknown
Other	Hobart LF	V				✓		Unknown
Other	Leichner LF			✓		✓		Unknown
Other	Mason County LF	✓				✓		Unknown
Other	Okanogan Central LF	✓			✓			Unknown
Other	Purdy LF	✓				✓		Unknown
Other	Ryegrass LF	✓			✓			Unknown
Other	Vashon LF	✓			✓			Unknown
Unknown WIP	Carnation LF							Unknown
Unknown WIP	Delano LF							Unknown
Unknown WIP	Enumclaw LF					✓		Unknown
Unknown WIP	Ephrata LF							Unknown
Unknown WIP	Fort Lewis LF #5							Unknown
Unknown WIP	Gibralter LF							Unknown
Unknown WIP	Holden Village LF							Unknown
Unknown WIP	Inman LF							Unknown
Unknown WIP	Manson LF							Unknown
Unknown WIP	New Waste Inc. LF							Unknown
Unknown WIP	North County LF							Unknown

Exhibit 3: Index of Landfills in Washington

Category	Landfill Name		WIP		Landfill	LFG Collected	LFG	Status of LFGTE
		<2.5 million tons	2.5 to 4 million tons	>4 million tons	Operating in 1998		Utilization Project	Project
Unknown WIP	Odessa LF							Unknown
Unknown WIP	Okanogan LF							Unknown
Unknown WIP	Olalla LF							Unknown
Unknown WIP	Pasco SLF							Unknown
Unknown WIP	Point Roberts LF							Unknown
Unknown WIP	Port Angeles SLF							Unknown
Unknown WIP	Rainbow Valley LF							Unknown
Unknown WIP	Richland LF							Unknown
Unknown WIP	San Juan County LF							Unknown
Unknown WIP	Snipes Mount LF							Unknown
Unknown WIP	South County LF							Unknown
Unknown WIP	Stevens County LF							Unknown
Unknown WIP	Sudbury Road LF							Unknown
Unknown WIP	Whitman County LF							Unknown
Unknown WIP	Yakima Firing Center							Unknown

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			Cathcart LF			Landfill Category	: Candidate	
		A. G	ENERAL LANDFILL INFO	RMATI	ON	3 .		
Landfill Owner:	Snohon	nish County	Annua	al Accept	ance Rate ((tons):	314,600	
Landfill Owner Type:	Public	-	Year A	ar Annual Acceptance Rate Reported:				
Alternative Landfill Na	ame:				ty (tons):	-		
City:	Snohon	nish	Acres	Currentl	y Landfille	d (acres):	56	
County:	Snohon	nish	Avera	ge Depth	(feet):		110	
State:	WA		1992	Waste-in	-Place (ton	s):	3,258,989	
Year Open:	1980		1998	Waste-in-	Place (ton:	s):	3,258,989	
Year Closed:	1992							
		I	B. LANDFILL GAS COLLE	CTION				
Estimated Methane Ge	neration (mmsc	f/d):]	1.25				
LFG Collection System	n Status:		Operation	onal				
Current LFG Collected	l (mmscf/d):			5.2				
Collection and Treatme	ent System Requ	uired Under NSF	S/EG:	No				
			C. LANDFILL GAS UTILIZ	ZATION				
Current Utilization:								
Utilization System	n Status:	Planned						
Utilization System		Reciprocatin	g Engine					
Utilization System		1	6 6					
Electric Utility Pr								
Natural Gas Provi								
Energy Purchaser	* *	PUD No 1 o	f Snohomish County					
- GJ	(-)-							
Capacity:		Electrici	ty Generation Project (MW)	C)R	Direct Use Project (mmBtu/l	nr)	
Estimated Potenti	al Capacity:			4			39	
Current Capacity:								
Planned Capacity	:		(5.6			108	
Utilities in County:		Bonneville F	Power Admin; PUD No 1 of S	nohomisl	n County			
		D. ENVIR	CONMENTAL BENEFITS (OF UTII	IZATION			
			Potentia			Current		
Methane Reduction (to	ms/vr)·		1 Otentia	ı	7,236	Current	20.043	
CO2 Equivalent of CH	- ·	nchr).		1	.51,956		420,901	
CO2 Equivalent of CII	4 Reduction (to	113/ y1).			.51,750		420,701	
Emissions Avoided by	Fossil Fuel Disp	olacement:	Electricity Generation	n Projec	t	Direct Use Projec	ct	
			CO2 (tons/yr)	SO2 (ton	s/yr)	CO2 (tons/yr) Se	O2 (tons/yr)	
		Coal:	30,782		195	21,790	198	
		Fuel Oil:	25,264		163	17,884	104	
	N	latural Gas:	16,988		0	12,026	0	
			E. CONTACT INFORMA	TION				
		Landfill (Owner			Landfill Operator		
Contact Name:	Jeff Kelly-Clar	ke, Executive D	rector	Jeff K	elly-Clarke	, Executive Director		
Mailing Address:	2930 Wetmore	Avenue		2930 V	Wetmore A	venue		
<i>J</i>								
Phone Number:	105 200 2405			425.21	00 2425			
	425-388-3425			425-3	38-3425			
Fax Number:								
* Itallicized indicates v	1	1 ED4	Dacamh	7 100	2	State: WA Page	-	

^{*} Itallicized indicates values estimated by EPA.

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Page:

		Cedar Hills	LF		Landfill Cate	gory:	Candidate
	A. G	ENERAL LANDFILL I	NFORMAT	ION			
Landfill Owner: Ki	ng County	A	nnual Accep	tance Rate (to	ons):		919,857
Landfill Owner Type:			-		ate Reported:		1993
Alternative Landfill Name:		Γ	Design Capaci	ty (tons):			
City: M	aple Valley	A	cres Current	ly Landfilled	(acres):		200
County: Ki	ng	A	verage Deptl	n (feet):			150
State: W	A	, -	1994 Waste-i	n-Place (tons)):	2	1,839,714
Year Open: 19	64	1	998 Waste-in	-Place (tons)	:	2.	5,519,142
Year Closed: 20	22						
	I	B. LANDFILL GAS CO	LLECTION				
Estimated Methane Generation (n	nmscf/d):		6.18				
LFG Collection System Status:		Op	erational				
Current LFG Collected (mmscf/d)):		10.0				
Collection and Treatment System	Required Under NSF	PS/EG:	No				
		C. LANDFILL GAS UT	TILIZATION	1			
Current Utilization:							
Utilization System Status:	Planned						
Utilization System Type:	Combined C	ycle					
Utilization System Start Yea	r: 1996						
Electric Utility Provider(s):							
Natural Gas Provider(s):							
Energy Purchaser(s):	Puget Sound	Power & Light Co					
Capacity:	Electrici	ty Generation Project (M	W) (OR	Direct Use Project (mm	Btu/hr))
Estimated Potential Capacit	y:		19				193
Current Capacity:							
Planned Capacity:			32				208
Utilities in County:	Bonneville F	Power Admin; PUD No 1	of Snohomis	h County; Pu	get Sound Power & Ligl	nt Co; S	Seattle
	D. ENVIR	RONMENTAL BENEF	TS OF UTI	LIZATION			
		Por	ential		Curre	nt	
Methane Reduction (tons/yr):				35,714			38,544
CO2 Equivalent of CH4 Reduction	n (tons/yr):		,	750,002			809,424
Emissions Avoided by Fossil Fuel	Displacement:	Electricity Gene	eration Projec	ot .	Direct Use F	Project	
Emissions rivolated by I ossii I att	Бізрійсетені.	CO2 (tons/yr)	SO2 (toi		CO2 (tons/yr)		2 (tons/yr)
	Coal:	152,330	552 (10)	963	107,549	502	979
	Fuel Oil:	125,026		805	88,271		514
	Natural Gas:	84,069		0	59,355		1
	T 10'11	E. CONTACT INFOL	RMATION		I ICH O		
a	Landfill	Owner			Landfill Operator		
Contact Name:			Rodn	ey Hansen, So	olid Waste Manager		
Mailing Address:				esler Way			
Phone Number:			Room				
			206-2	96-4385			
Fax Number:							
* Itallicized indicates values estim	ated by EPA.	Dec	ember 5, 199	8	State: WA	Page:	2

^{*} Itallicized indicates values estimated by EPA.

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Cheyne Road LF Landfill Category: Candidate A. GENERAL LANDFILL INFORMATION Landfill Owner: Yakima County Solid Waste Division Annual Acceptance Rate (tons): 86,143 Landfill Owner Type: Public Year Annual Acceptance Rate Reported: 1998 Alternative Landfill Name: Design Capacity (tons): City: Yakima Acres Currently Landfilled (acres): County: Yakima Average Depth (feet): State: WA Waste-in-Place (tons): 1.198,976 Year Open: 1968 1,281,664 1998 Waste-in-Place (tons): Year Closed: **B. LANDFILL GAS COLLECTION** Estimated Methane Generation (mmscf/d): 0.75 LFG Collection System Status: Current LFG Collected (mmscf/d): Collection and Treatment System Required Under NSPS/EG: No C. LANDFILL GAS UTILIZATION Current Utilization: **Utilization System Status:** Potential Utilization System Type: Unknown Utilization System Start Year: Electric Utility Provider(s): Natural Gas Provider(s): Energy Purchaser(s): Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr) 2 Estimated Potential Capacity: 23 Current Capacity: Planned Capacity: Benton Rural Electric Assn; Bonneville Power Admin; Pacificorp; PUD No 1 of Benton County; PUD Utilities in County: D. ENVIRONMENTAL BENEFITS OF UTILIZATION Current Potential Methane Reduction (tons/yr): 4,312 0 CO2 Equivalent of CH4 Reduction (tons/yr): 90.550 0 Emissions Avoided by Fossil Fuel Displacement: Electricity Generation Project Direct Use Project CO2 (tons/yr) SO2 (tons/yr) CO2 (tons/yr) SO2 (tons/yr) Coal: 18,153 115 12,985 118 Fuel Oil: 14,899 96 10,657 62 Natural Gas: 10.019 0 0 7,166 E. CONTACT INFORMATION Landfill Owner Landfill Operator Contact Name: Ron Pepper, Solid Waste Engineer Ron Pepper, Solid Waste Engineer Mailing Address: 128 North 2nd Street 128 North 2nd Street Room 408 Courthouse Room 408 Courthouse Phone Number: 509-574-2455 509-574-2455

* Itallicized indicates values estimated by EPA. December 5, 1998 State: WA Page: 3



Cowlitz County LF-B Landfill Category: Candidate A. GENERAL LANDFILL INFORMATION Landfill Owner: Cowlitz County Annual Acceptance Rate (tons): 82,952 Landfill Owner Type: Public Year Annual Acceptance Rate Reported: 1998 Alternative Landfill Name: Design Capacity (tons): City: Kelso Acres Currently Landfilled (acres): County: Cowlitz Average Depth (feet): State: WA Waste-in-Place (tons): 1,984,762 1974 Year Open: 1998 Waste-in-Place (tons): 2,157,350 Year Closed: 2008 **B. LANDFILL GAS COLLECTION** 0.97 Estimated Methane Generation (mmscf/d): LFG Collection System Status: Current LFG Collected (mmscf/d): Collection and Treatment System Required Under NSPS/EG: No C. LANDFILL GAS UTILIZATION Current Utilization: **Utilization System Status:** Potential Utilization System Type: Unknown Utilization System Start Year: Electric Utility Provider(s): Cowlitz Coutny Public Utility District #1 Natural Gas Provider(s): Energy Purchaser(s):

Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr)

Estimated Potential Capacity: 3 30

Current Capacity: 4

Utilities in County: Bonneville Power Admin; PUD No 1 of Cowlitz County

D. ENVIRONMENTAL BENEFITS OF UTILIZATION										
	Pote	ential	Current							
Methane Reduction (tons/yr):		5,607	(
CO2 Equivalent of CH4 Reduction (tons/yr):		117,745	0							
Emissions Avoided by Fossil Fuel Displacement:	Electricity Gener	ration Project	Direct Use Project							
	CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)						
Coal:	23,678	150	16,884	154						
Fuel Oil:	19,434	125	13,858	81						
Natural Gas:	13,068	0	9,318	0						

E. CONTACT INFORMATION Landfill Owner Landfill Operator

Contact Name: Don Olson Don Olson, Public Works Director

Mailing Address: 207 4th Avenue North 207 4th Avenue North

Phone Number: 360-577-3125 360-577-3125

Fax Number:

^{*} Itallicized indicates values estimated by EPA. December 5, 1998 State: WA Page: 4



Greater Wenatchee LF Landfill Category: Candidate A. GENERAL LANDFILL INFORMATION Landfill Owner: WMI Annual Acceptance Rate (tons): 100,444 Landfill Owner Type: Private Year Annual Acceptance Rate Reported: 1998 Alternative Landfill Name: Design Capacity (tons): City: Acres Currently Landfilled (acres): County: Douglas Average Depth (feet): State: WA Waste-in-Place (tons): 2,008,248 Year Open: 1975 1998 Waste-in-Place (tons): 2,190,816 Year Closed: **B. LANDFILL GAS COLLECTION** 0.98 Estimated Methane Generation (mmscf/d): LFG Collection System Status: Current LFG Collected (mmscf/d): Collection and Treatment System Required Under NSPS/EG: No C. LANDFILL GAS UTILIZATION Current Utilization: **Utilization System Status:** Potential Utilization System Type: Unknown Utilization System Start Year: Electric Utility Provider(s): Natural Gas Provider(s): Energy Purchaser(s): Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr) Estimated Potential Capacity: 3 31 Current Capacity: Planned Capacity: Bonneville Power Admin; Nespelem Valley Elec Coop Inc; PUD No 1 of Douglas County; Waterville Utilities in County: D. ENVIRONMENTAL BENEFITS OF UTILIZATION Potential Current Methane Reduction (tons/yr): 5,656 0 CO2 Equivalent of CH4 Reduction (tons/yr): 118,784 0 Emissions Avoided by Fossil Fuel Displacement: Electricity Generation Project Direct Use Project CO2 (tons/yr) SO2 (tons/yr) CO2 (tons/yr) SO2 (tons/yr) Coal: 24,468 155 17,034 155 Fuel Oil: 20,082 129 13,980 82 Natural Gas: 13.503 0 0 9,401 E. CONTACT INFORMATION Landfill Owner Landfill Operator Contact Name: Eldon Richardson, Operations Manager Eldon Richardson, Operations Manager Mailing Address: P.O. Box 1440 P.O. Box 1440 Phone Number: 509-662-4591 509-662-4591

* Itallicized indicates values estimated by EPA. December 5, 1998 State: WA Page: 5

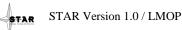


			Hawks Prairie	LF		Landfill Cate	gory: Candidat	
		A. G	ENERAL LANDFILL II	NFORMA	TION			
Landfill Owner:	Thursto	on County	A	nnual Acce	eptance Rate	(tons):	129,907	
Landfill Owner Type:		Š			-	Rate Reported:	1998	
Alternative Landfill N	Jame:		D	Design Capacity (tons):				
City:	Olymp	ia	A	Acres Currently Landfilled (acres):				
County:	Thursto	on	A	verage Dep	oth (feet):		80	
State:	WA		W	aste-in-Pla	ace (tons):		2,415,609	
Year Open:	1970		19	998 Waste-	in-Place (ton	s):	2,594,543	
Year Closed:	2007							
		I	B. LANDFILL GAS CO	LLECTIO	N			
Estimated Methane G	eneration (mmsc	·f/d):		1.08				
LFG Collection Syste	m Status:		Ope	rational				
Current LFG Collecte	d (mmscf/d):							
Collection and Treatn	nent System Req	uired Under NSF	PS/EG:	No				
			C. LANDFILL GAS UT	ILIZATIO	N			
Current Utilization:								
Utilization Syste	m Status:	Potential						
Utilization Syste	m Type:	Unknown						
Utilization Syste	m Start Year:							
Electric Utility P	rovider(s):	Puget Sound	Electric (or Energy) - [PS	SE]				
Natural Gas Prov	vider(s):							
Energy Purchase	r(s):	Chese Factor	ry located 1 mile away. C	Conside				
Capacity:		Electrici	ty Generation Project (MV	W)	OR	Direct Use Project (mm	Btu/hr)	
	tial Canacity		<u> </u>	3		.,	34	
Estimated Potent Current Capacity	= -			3			34	
Planned Capacity				1.8			14	
Transect Capacit				1.0			17	
Utilities in County:		Bonneville F	Power Admin; PUD No 1	of Lewis C	County; Puget	Sound Power & Light Co		
		D. ENVIE	RONMENTAL BENEFI	TS OF UT	TILIZATION	N .		
			Pote	ential		Curre	nt	
Methane Reduction (t	ons/yr):				6,253		C	
CO2 Equivalent of CI	H4 Reduction (to	ns/yr):			131,321		C	
Emissions Avoided by	Fossil Fuel Disp	placement:	Electricity Gener	_		Direct Use F	5	
			CO2 (tons/yr)	SO2 (1	tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)	
		Coal:	26,835		170	18,831	171	
		Fuel Oil:	22,025		142	15,456	90	
	λ	latural Gas:	14,810		0	10,393	C	
			E. CONTACT INFOR	MATION				
				TATE TION				
		Landfill				Landfill Operator		
Contact Nama	D:II T.	Landfill (M'11 E	Landfill Operator		
Contact Name:	Bill Townsend	I				cility Manager		
Contact Name: Mailing Address:	921 Lakeridge	l e Drive SW			re Merrill, Fa	cility Manager		
		l e Drive SW				cility Manager		



			W.I. W.II. A.		Y 1011 G	g vi
		A C	Hidden Valley LF ENERAL LANDFILL INFO	DM ATION	Landfill Car	tegory: Candidate
Landfill Owner:		ecovery, Inc.		al Acceptance Rate		293,708
Landfill Owner Type:	Private			Annual Acceptance	Rate Reported:	1998
Alternative Landfill N	ame:		_	n Capacity (tons):		
City:	Puyallu	ıp		Currently Landfille	ed (acres):	65
County:	Pierce		Avera	ge Depth (feet):		110
State:	WA		Waste	e-in-Place (tons):		17,425,280
Year Open:	1959		1998	Waste-in-Place (ton	s):	18,342,400
Year Closed:	1999					
			B. LANDFILL GAS COLLE	ECTION		
Estimated Methane Ge	eneration (mmsc	f/d):	4	4.03		
LFG Collection System	n Status:		Operation	onal		
Current LFG Collected	d (mmscf/d):					
Collection and Treatm	ent System Requ	uired Under NS		No		
			C. LANDFILL GAS UTILIZ	ZATION		
Current Utilization:						
Utilization Syster	n Status:	Planned				
Utilization Syster	n Type:	Unknown				
Utilization Syster	n Start Year:					
Electric Utility Pr	ovider(s):					
Natural Gas Prov	ider(s):					
Energy Purchaser	r(s):					
Capacity:		Electric	ity Generation Project (MW)	OR	Direct Use Project (mr	mBtu/hr)
Estimated Potenti	ial Capacity:			13		126
Current Capacity:	1					
Planned Capacity	:					
Utilities in County:		Alder Mutu	al Light Co Inc; Bonneville Po	wer Admin; Eatonv	rille Power & Light Dept:	; Elmhurst Mut
,			RONMENTAL BENEFITS (
		D. LIVI	Potentia		Curr	iont.
Madama Dadaadaa (4)			Potentia		Curr	
Methane Reduction (to		()		23,282		0
CO2 Equivalent of CH	14 Reduction (to	ns/yr):		488,916		0
Emissions Avoided by	Fossil Fuel Dist	olacement:	Electricity Generation	on Project	Direct Use	Project
			-	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)
		Coal:	99,449	629	70,110	638
		Fuel Oil:	81,623	525	57,543	335
	N	atural Gas:	54,885	0	38,693	0
			E. CONTACT INFORMA			
		Landfill			Landfill Operator	
Contact Name:	Harvey Domar	n, Facility Mana		Harvey Doman, l		
		-	D	-	acing manager	
Mailing Address:	P.O. Box 7305	7		P.O. Box 73057		
Phone Number:	752 017 7555			252 047 7555		
	253-847-7555			253-847-7555		
Fax Number:						

^{*} Itallicized indicates values estimated by EPA.



State: WA

			Kent Highlands L	F		Lan	dfill Category:	Candidate
		A. Gl	ENERAL LANDFILL INI		ION			
Landfill Owner:	City of	Seattle	Ann	ual Accept	ance Rate (tons):		
Landfill Owner Type:			Yea	r Annual A	cceptance l	Rate Reported:		
Alternative Landfill N	ame:		Des	ign Capaci	ty (tons):			
City:	Kent		Acre	es Currentl	y Landfilled	d (acres):		60
County:	King		Ave	rage Depth	(feet):			110
State:	WA		199	4 Waste-in	-Place (ton	s):		8,000,000
Year Open:	1968		199	8 Waste-in-	Place (tons	s):		8,000,000
Year Closed:	1986							
		E	3. LANDFILL GAS COLI	ECTION				
Estimated Methane Ge	eneration (mmscj	f/d):		2.46				
LFG Collection System	n Status:		Opera	tional				
Current LFG Collected	d (mmscf/d):			3.7				
Collection and Treatm	ent System Requ	uired Under NSP	S/EG:	No				
		(C. LANDFILL GAS UTIL	IZATION	•			
Current Utilization:								
Utilization Syster	n Status:	Potential						
Utilization Syster	п Туре:	Reciprocatin	g Engine					
Utilization Syster	n Start Year:							
Electric Utility Pr								
Natural Gas Prov	ider(s):							
Energy Purchaser	r(s):	Seattle City l	Light					
Capacity:		Electricit	y Generation Project (MW)	C)R	Direct Use Pro	oject (mmBtu/hr	:)
Estimated Potenti	ial Capacity:			8				77
Current Capacity:	:							
Planned Capacity	:			3.1				25
Utilities in County:		Bonneville P	ower Admin; PUD No 1 of	Snohomisl	n County; P	uget Sound Pow	ver & Light Co;	Seattle
		D. ENVIR	ONMENTAL BENEFITS	OF UTII	IZATION			
			Poten	ial			Current	
Methane Reduction (to	ons/yr):				14,247			14,261
CO2 Equivalent of CH	14 Reduction (tor	ns/yr):		2	299,187			299,487
		-						
Emissions Avoided by	Fossil Fuel Disp	placement:	Electricity General	=			ect Use Project	
			CO2 (tons/yr)	SO2 (ton	s/yr)	CO2 (tons	s/yr) SO	2 (tons/yr)
		Coal:	60,774		384	42	2,903	390
		Fuel Oil:	49,881		321	35	5,213	205
	N	atural Gas:	33,541		0	23	3,678	0
			E. CONTACT INFORM	ATION				
		Landfill (Landfill Ope	erator	
Contact Name:								
Mailing Address:								
maning radices.								
Phone Number:				206-69	84-7686			
				200-00	<i>υ-</i> τ− / UUU			
Fax Number:								

^{*} Itallicized indicates values estimated by EPA. December 5, 1998 State: WA

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			Northside L	F		Landfill Categ	ory: Current
		A. G	ENERAL LANDFILL I	NFORMAT	ON		
Landfill Owner:	City of	Spokane	A	nnual Accept	ance Rate (to	ns):	
Landfill Owner Type:	Public	•		-	cceptance Ra		
Alternative Landfill Nan	ne:			esign Capaci	-	•	
City:	Spokan	e			y Landfilled (acres):	350
County:	Spokan			verage Depth	='	,	100
State:	WA				-Place (tons):	•	4,000,000
Year Open:	1968				Place (tons):		4,000,000
Year Closed:	1993			y o Treiste in	ruce (rons).		.,000,000
		1	B. LANDFILL GAS CO	LLECTION			
Estimated Methane Gene	eration (mmsc	f/d):		1.44			
LFG Collection System		,	Ope	rational			
Current LFG Collected (•	2.9			
Collection and Treatmen		uired Under NSF	S/EG:	No			
	io System recq.		C. LANDFILL GAS UT				
Current Utilization:							
Utilization System	Ctotuc	Construction					
Utilization System							
Utilization System		Reciprocatin	g Engine				
-		1998					
Electric Utility Prov							
Natural Gas Provide		*** 1 * .	W. D				
Energy Purchaser(s):	Washington	Water Power				
Capacity:		Electrici	ty Generation Project (MV	W) C	OR]	Direct Use Project (mmB	tu/hr)
Estimated Potential	l Capacity:			5			45
Current Capacity:							
Planned Capacity:							60
Utilities in County:		Bonneville F	Power Admin; Cheney Lig	ght Dept; Inla	nd Power & I	Light Company; Kootena	i Electric Co
•			RONMENTAL BENEFI				
				ential		Current	
 Methane Reduction (ton:	c/vr).		1 016	muu	8,332	Current	11,178
CO2 Equivalent of CH4	•	nchr).		1	74,968		234,734
CO2 Equivalent of C114	Keduction (tot	us/yi).			. 74,506		234,734
Emissions Avoided by Fo	ossil Fuel Disp	olacement:	Electricity Gene	ration Projec	t	Direct Use Pr	oject
			CO2 (tons/yr)	SO2 (ton	s/yr)	CO2 (tons/yr)	SO2 (tons/yr)
		Coal:	35,517		225	25,090	228
		Fuel Oil:	29,151		188	20,593	120
	N	atural Gas:	19,602		0	13,847	0
		T 10'11	E. CONTACT INFOR	MATION		1. 1011.0	
a		Landfill	Jwner			Landfill Operator	
Contact Name:				Denni	s Hein, Mana	ger	
Mailing Address:				East 1	225 Marietta		
DI N							
Phone Number:				509-6	25-7878		
Fax Number:							
				1			



			Olympic View LF		Landell Catagon	: Current
		A C	ENERAL LANDFILL INFO	RMATION	Landfill Category	. Current
Landfill Owner:	Kitsap	County		al Acceptance Rate		298,841
Landfill Owner Type:	Public			Annual Acceptance	Rate Reported:	1998
Alternative Landfill Na	3 1	ic View SLF	-	n Capacity (tons):	17	
City:	Kitsap	County		Currently Landfille	d (acres):	65
County:	Kitsap			ge Depth (feet):		100
State:	WA			e-in-Place (tons):		7,004,248
Year Open:	1960		1998	Waste-in-Place (ton	s):	7,382,856
Year Closed:	2012	I	B. LANDFILL GAS COLLE	CCTION		
Estimated Methane Ger	navation (mmsa			1.91		
LFG Collection System		j/a):				
Current LFG Collected			Operation	Jilai		
Collection and Treatme		uired Under NSE	98/FG:	No		
Concetion and Treatme	in System Requ		C. LANDFILL GAS UTILIZ			
Current Utilization:						
Utilization System	Status	Operational				
Utilization System		Leachate Ev	anoration			
Utilization System		1998	aporation			
Electric Utility Pro		1,,,0				
Natural Gas Provid						
Energy Purchaser(* *					
,						
Capacity:		Electrici	ty Generation Project (MW)	OR	Direct Use Project (mmBtu/l	nr)
Estimated Potentia	al Capacity:			6		60
Current Capacity:						
Planned Capacity:						
Utilities in County:		Bonneville F	Power Admin; PUD No 3 of M	Iason County; Puge	t Sound Power & Light Co	
		D. ENVIR	RONMENTAL BENEFITS	OF UTILIZATION	<u> </u>	
			Potentia	ıl	Current	
Methane Reduction (tor	ns/vr):		1 01011111	11,036		0
CO2 Equivalent of CH4	= :	ns/vr):		231,754		0
1				·		-
Emissions Avoided by I	Fossil Fuel Disp	olacement:	Electricity Generation	•	Direct Use Proje	
			CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr) S	O2 (tons/yr)
		Coal:	47,357	299	33,233	302
		Fuel Oil:	38,868	250	27,276	159
	N	atural Gas:	26,136	0	18,341	0
			E. CONTACT INFORMA	TION		
		Landfill (Owner		Landfill Operator	
Contact Name:	Damon Defratt	es		Damon Defrattes		
Mailing Address:	10015 SW Bar	ney White Road		10015 SW Barne	y White Road	
Phone Number:	360-674-2331			360-876-7053		
Fax Number:						



			Roosevelt Region	al LF	Landfill Cate	egory: Candidate		
		A. G	ENERAL LANDFILL IN		J	<u> </u>		
Landfill Owner:	Rabanc	20	Ar	nual Acceptance Rate	(tons):	1,018,032		
Landfill Owner Type:	Private			ar Annual Acceptance		1993		
Alternative Landfill Na	ame:		Design Capacity (tons):					
City:	Golden	dale	Acres Currently Landfilled (acres):			72		
County:	Klickita	at	Average Depth (feet):			180		
State:	WA		Waste-in-Place (tons):			7,126,224		
Year Open:	1990		19	98 Waste-in-Place (tor	ns):	9,162,288		
Year Closed:	2030							
		J	B. LANDFILL GAS COL	LECTION				
Estimated Methane Ge	neration (mmsc	f/d):		2.76				
LFG Collection System	n Status:		Oper	rational				
Current LFG Collected	l (mmscf/d):							
Collection and Treatme	ent System Requ	uired Under NSF	PS/EG:	No				
			C. LANDFILL GAS UTI	LIZATION				
Current Utilization:								
Utilization System	n Status:	Planned						
Utilization System	n Type:	Reciprocatin	g Engine					
Utilization System	n Start Year:	1999						
Electric Utility Pr	ovider(s):							
Natural Gas Provi	ider(s):							
Energy Purchaser(s): Klickitat PUD								
Capacity:		Electrici	ty Generation Project (MW	V) OR	Direct Use Project (mm	Btu/hr)		
			. .	9		86		
Estimated Potential Capacity: Current Capacity:				9		80		
Planned Capacity								
Trainied Capacity	•							
Utilities in County:		Bonneville I	Power Admin; PUD No 1 o	of Klickitat County				
		D. ENVII	RONMENTAL BENEFIT	S OF UTILIZATION	N			
			Potential		Curre	Current		
Methane Reduction (tons/yr):				15,966		0		
CO2 Equivalent of CH4 Reduction (tons/yr):				335,280		0		
F A .1.11	E '1E 1D'	1 ,	FI C		D: (II)			
Emissions Avoided by Fossil Fuel Displacement:			Electricity Generation Project CO2 (tons/yr) SO2 (tons/yr)			Direct Use Project CO2 (tons/yr) SO2 (tons/yr)		
		Coal:	67,878	302 (tons/yr) 429	48,079	302 (tons/yr) 438		
		Fuel Oil:	55,711	359	39,461	230		
Natural Gas:			37,461	0	26,534	0		
		T 10171	E. CONTACT INFOR	MATION	1 1641 0			
Landfill Owner				Landfill Operator				
Contact Name:	Milo Haugen			Bill Borlang	Bill Borlang			
Mailing Address:				200 112th Aven	ue NE			
				Suite 300				
Phone Number:	509-384-5641			509-384-5641				
Fax Number:				509-384-5881				



			Tacon	na LF			Landfill Category:	Current
		A. G	ENERAL LANDFI		IATION			
Landfill Owner: City of Tacoma, Refuse				on Annual Acceptance Rate (tons):			. 1	55,378
Landfill Owner Type:				Year Annual Acceptance Rate Reported:			ted:	1993
Alternative Landfill N	-			Design Capacity (tons):				120
City:	Tacoma Pierce	a		Acres Currently Landfilled (acres):				130 50
County: State:				Average Depth (feet):				
Year Open:	WA 1960	WA			1994 Waste-in-Place (tons): 1998 Waste-in-Place (tons):			5,610,756
Year Closed:	2014	1998 Waste			ie-in-Piace	(ions):		5,832,268
B. LANDFILL GAS COLLECTION								
F. i. III d. G.	/		CERTIFIED GIA		1011			
Estimated Methane Ge	-	f/d):		1.60				
LFG Collection System				Operational				
Current LFG Collected	` ′	· III I NOT	ig /E/C	3.5				
Collection and Treatm	ent System Req		S/EG: C. LANDFILL GAS	Yes	ION			
			LANDFILL GAS	UTILIZAT	ION			
Current Utilization:								
Utilization Syster		Construction						
Utilization Syster	• •	Reciprocatin	g Engine					
Utilization Syster	n Start Year:	1998						
Electric Utility Pr	rovider(s):	Tacoma Dep	artment of Public Ut	tilities, Ligh				
Natural Gas Prov	ider(s):							
Energy Purchaser	r(s):							
Capacity:		Electrici	ty Generation Projec	t (MW)	OR	Direct Us	se Project (mmBtu/h	r)
Estimated Potent	ial Capacity:			5				50
Current Capacity:								
Planned Capacity:		1.6				73		
			l Light Co Inc; Boni	neville Power	Admin; Eat	tonville Power	& Light Dept; Elmhı	ırst Mut
,			RONMENTAL BEN					
		D. ENVIE	CONVIENTAL BEI		JIILIZAI	ION		
			Potential			Current		
Methane Reduction (tons/yr):					9,226			13,490
CO2 Equivalent of CH4 Reduction (tons/yr):				193,738	3		283,298	
Emissions Avoided by	Fossil Fuel Dist	olacement:	Electricity (Generation Pi	roiect		Direct Use Projec	<i>t</i>
Emissions Avoided by Fossil Fuel Displacement:					O2 (tons/yr) $SO2 (tons/yr)$			
		G 1				602		
		Coal:	39,46	04	249		27,782	253
Fuel Oil:			32,39	90	209		22,802	133
Natural Gas:			21,78	30	0		15,332	0
			E. CONTACT IN		N		<u> </u>	
		L andfill (FORMATIC	/1 1	I andfil	l Operator	
Contact Name:	G . W .	Landfill Owner			Landfill Operator			
Contact Name.	Gary Kato			P	Phillip Ringrose, Public Works Manager			
Mailing Address:	3510 South Mullen Street			3:	3510 South Mullen Street			
Phone Number:	Phone Number: 253-593-7713				53-591-554	3		
233 373 1113				2	JJ-J71-JJ4.	J		
Fax Number:								

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Terrace Heights LF Landfill Category: Candidate A. GENERAL LANDFILL INFORMATION Landfill Owner: Yakima County Annual Acceptance Rate (tons): 160,015 Landfill Owner Type: Public Year Annual Acceptance Rate Reported: 1998 Alternative Landfill Name: Design Capacity (tons): City: Yakima Acres Currently Landfilled (acres): County: Yakima Average Depth (feet): State: WA Waste-in-Place (tons): 3,727,219 Year Open: 1974 1998 Waste-in-Place (tons): 4,051,325 Year Closed: 2012 **B. LANDFILL GAS COLLECTION** Estimated Methane Generation (mmscf/d): 1 45 LFG Collection System Status: Current LFG Collected (mmscf/d): Collection and Treatment System Required Under NSPS/EG: No C. LANDFILL GAS UTILIZATION Current Utilization: **Utilization System Status:** Potential Utilization System Type: Unknown Utilization System Start Year: Electric Utility Provider(s): Natural Gas Provider(s): Energy Purchaser(s): Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr) Estimated Potential Capacity: 5 45 Current Capacity: Planned Capacity: Benton Rural Electric Assn; Bonneville Power Admin; Pacificorp; PUD No 1 of Benton County; PUD Utilities in County: D. ENVIRONMENTAL BENEFITS OF UTILIZATION Potential Current Methane Reduction (tons/yr): 8,408 0 CO2 Equivalent of CH4 Reduction (tons/yr): 176,562 0 Emissions Avoided by Fossil Fuel Displacement: Electricity Generation Project Direct Use Project CO2 (tons/yr) SO2 (tons/yr) CO2 (tons/yr) SO2 (tons/yr) Coal: 35,517 225 25,319 230 Fuel Oil: 29,151 188 20,780 121 Natural Gas: 0 0 19,602 13,973 E. CONTACT INFORMATION Landfill Owner Landfill Operator Contact Name: Ron Pepper Ron Pepper, Solid Waste Engineer Mailing Address: 128 North 2nd Street 128 North 2nd Street 408 Courthouse 408 Courthouse Phone Number: 509-574-2455 509-574-2455

* Itallicized indicates values estimated by EPA. December 5, 1998 State: WA Page: 13



			West LF		Landfill Catego	rv: Candidate		
		A. Gl	ENERAL LANDFILL INFO	RMATION	Lanajii Caicgo	y. Canadate		
Landfill Owner:			Annua	ll Acceptance Rate	(tons):			
Landfill Owner Type:			Year Annual Acceptance Rate Reported:					
Alternative Landfill Name:			Design Capacity (tons):					
City:		rence available	Acres Currently Landfilled (acres):					
County:			Average Depth (feet):					
State: WA			Waste-in-Place (tons):					
Year Open:	*****		1998 Waste-in-Place (tons):					
Year Closed:			1770 (rusie-in-1 iuce (ioi	<i>13)</i> .			
Tear Closed.		F	B. LANDFILL GAS COLLE	CTION				
Estimated Methane Gei	neration (mmsc							
LFG Collection System		γα).	Plan					
Current LFG Collected			1 1411	ned				
Collection and Treatme		vined Under NCD	NC/EC.	No				
Collection and Treatme	ent System Requ		S/EG: C. LANDFILL GAS UTILIZ	No ZATION				
		<u>'</u>	C. LANDFILL GAS UTILIZ	ATION				
Current Utilization:	_							
Utilization System		Planned						
Utilization System		Unknown						
Utilization System								
Electric Utility Pro								
Natural Gas Provid	der(s):							
Energy Purchaser((s):							
Capacity:		Electricit	ty Generation Project (MW)	OR	Direct Use Project (mmBt	ı/hr)		
Estimated Potentic	al Capacity:							
Current Capacity:								
Planned Capacity:								
Utilities in County:								
		D. ENVIR	RONMENTAL BENEFITS (OF UTILIZATION	N			
			Potentia	l	Current			
Methane Reduction (to	ns/yr):							
CO2 Equivalent of CH	4 Reduction (to	ns/yr):						
	-	-						
Emissions Avoided by I	Fossil Fuel Disp	olacement:	Electricity Generation Project		Direct Use Pro	ject		
			CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)		
		Coal:						
Fuel Oil:								
	N	atural Gas:						
			E. CONTACT INFORMA	TION				
		Landfill (Owner		Landfill Operator			
Contact Name:								
Mailing Addres								
Mailing Address:								
Phone Number:								
Fax Number:								

